



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/863,948	05/23/2001	John K. Hynes	16072-149	1013

7590 07/14/2004

Keating & Bennett, LLP
10400 Eaton Place
Suite 312
Fairfax, VA 22030

EXAMINER

FIGUEROA, FELIX O

ART UNIT	PAPER NUMBER
----------	--------------

2833

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/863,948	HYNES ET AL.	
	Examiner	Art Unit	
	Felix O. Figueroa	2833	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-19,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-19,21 and 22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 13, 2004 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4,6-11, 21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pei et al. (US 5,997,317).

Prior Art Fig. 6 of Pei (PAF) discloses an electrical connector portion (5) comprising an insulating substrate (52) having a first major face (521) and an oppositely disposed second major face; a plurality of non-recessed apertures (not labeled) extending from the first major surface to the second major surface; a plurality of elongated electrically conductive pins (51) extending through the apertures; and a plurality of reflowable electrical conductors (23) disposed adjacent the first major face, the elongated conductors extending into a respective reflowable conductor at a fusing

interface, and the pins having a diameter that is less than a diameter of the reflowable electrical conductor.

The PAF discloses substantially the claimed invention except for the plurality of insulating posts. Pei teaches (in Fig.5) a plurality (a pair) of insulating posts extending from a first major face (12) to limit the position (col.3 lines 1-2) of the reflowable conductors (23). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form the first major face with a plurality of insulating posts, as taught by Pei, to limit the position of the reflowable conductors.

PAF, as modified, discloses substantially the claimed invention except for the number of contact locations, i.e. the number of posts per conductor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the connector portion of Pei having four (two pairs) insulating post for each reflowable conductor in order to limit the reflowable conductor in various directions.

Regarding claim 2, PAF also discloses the elongated conductor extending substantially beyond the first major surface.

Regarding claims 3 and 4, PAF discloses substantially the claimed invention except for the specific shape of the apertures. However, it would have been an obvious matter of design preference to elect a specific shape, such as a cylindrical or rectangular, since applicant has not disclosed that such shape solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well independently from the shape of the aperture.

Regarding claims 8 and 9, PAF discloses substantially the claimed invention except for the shape of the specific shapes of the posts. However, it would have been an obvious matter of design choice to form the post in different shapes, since applicant has not disclosed that such modification solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the posts shown by Pei.

Claims 12-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pei et al. in view of Swamy et al. (US 5,613,033).

The PAF Pei, as modified, discloses (as previously discussed) substantially the claimed invention except for plurality of insulating plates. Swamy teaches a plurality of insulating plates stacked on top of a PCB to minimize PCB interconnect area. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to form a plurality of insulating plates, as taught by Swamy, to minimize PCB interconnect area.

Regarding claims 15 and 16, see discussion on claims 8 and 9.

Response to Arguments

Applicant's arguments filed May 13, 2004 have been fully considered but they are not persuasive.

In response to applicant's arguments that Pei, in Figs.1-5, teaches the opposite of Applicant's claimed invention, i.e. the diameter of the pin being less than that of the solder ball, please note that one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re*

F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). In this case, the prior art Figure 6 teaches the diameter of the pin being less than that of the solder ball.

In response to applicant's argument that "the Examiner seeks to ignore the clear teaching of Figs. 1-5 of Pei et al. requiring the use of a horizontally extending disk-like plate having a diameter that is much larger than a diameter of the portion of the conductor pin that will be attached to the solder ball, and instead pick and choose to use only the two insulating posts shown as an added feature in Fig. 5", please note that the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, Pei discloses the use of post as an improvement from the first embodiment (col.2 lines 65-67), i.e. providing a particular advantage, to limit the position of the solder balls. Please note that this advantage does not depend nor requires the disk-like plate.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a

Art Unit: 2833

reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971). In this case, Pei teaches the use of post to limit the position of the solder balls.

In response to applicant's argument that "there is no recognition of the problem solved by the present invention", please note the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985). Nonetheless, it is noted that the post of Pei will prevent an adjacent solder ball from occupying at least part of the excess space around the solder ball.

In response to Applicant's arguments that in Pei "only two insulative standoffs 16 are needed and no additional standoffs are needed or even contemplated because of the use of the horizontally-extending flat bottom portion 22", please note that while Pei discloses the use of two posts, it does not restrict or exclude the use of more post to limit movement of the solder ball in more than one direction.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Felix O. Figueroa whose telephone number is (571) 272-2003. The examiner can normally be reached on Mon.-Fri., 10:00am-6:00pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paula A. Bradley can be reached on (571) 272-2800 Ext. 33. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2833

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ffr




R. AUSTIN BRADLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800